

Sustainable Street Design

Learning From Other Places

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Overview

- Sustainable street design is in its infancy; Pacific Northwest – Portland, Seattle, Vancouver – leads the way
- Other cities are also moving ahead, often one piece at a time
- Few accepted “standard” ways of doing things; much trial and error
- This presentation mostly focuses on North America – but plenty to learn from abroad

Sustainably Designed Streets

1. Are oriented to place pedestrians and cyclists on equal footing with automobiles,
2. Are engineered for stormwater reduction and absorption, and
3. Contain significant greenery in the form of streetscapes and street trees.

Ahwahnee Principles

- Developed in 1991 to counter deleterious effects of sprawl & poorly planned development
- Relevant to sustainable street design:
 - Walkable communities;
 - Open, green space;
 - Connected, well-defined bike & pedestrian paths;
 - Discouragement of high speed auto traffic;
 - Promotion of efficient water use (natural drainage, drought tolerant landscaping, recycling);
 - Street orientation & shading add for greater energy efficiency.

Definitions

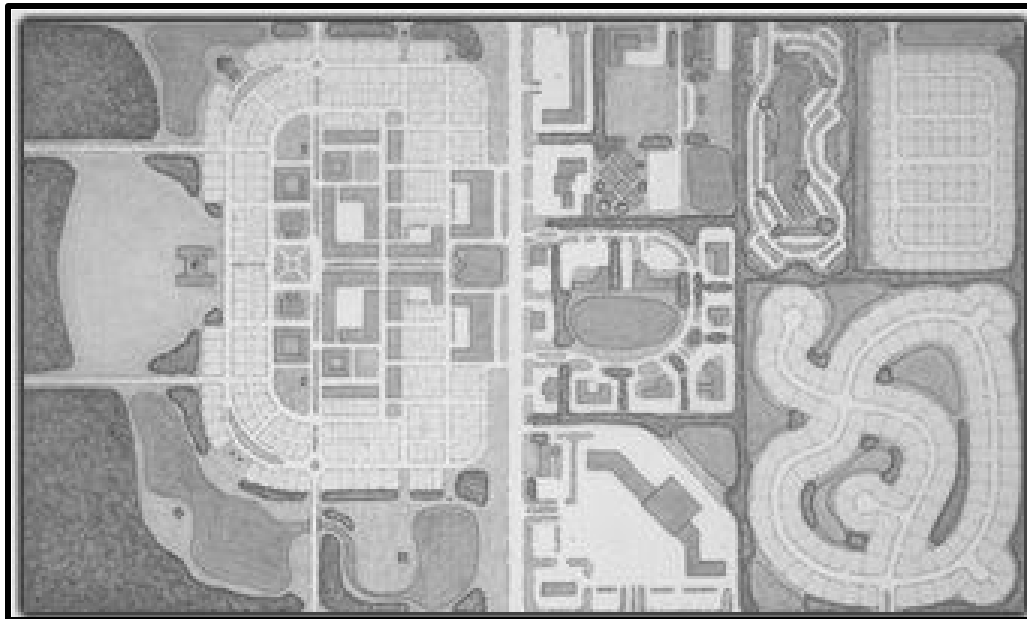
- Woonerf: Dutch “living yards”
 - Cars equal to other transit forms
 - Traffic calming, planters, etc.
- Chicane: Curb extenders that form a series of reversing S-curves, typically in series of three
- French drains: Pipeless drains. Water collects in gravel/stone-filled channels on or just below surface, filtering into the ground.
- Raingardens: swale-like planted areas to mitigate stormwater runoff



www.leparcforestier.org/mobilite.htm

Sustainable vs. Conventional neighborhood design

- Street and neighborhood layout are, of course, key elements to “sustainable” street design



Sustainable

Conventional

Current Situation: Seattle

- “Green Streets” city policy
 - Designated streets in downtown
 - Added in neighborhood plans
 - Needs updating
- Implementation has been challenging
- Some successes:
 - 5th and Bell; Vine Street
- Redevelopment:
political context



SPU leads the way in Seattle

- SEA (Street Edge Alternative) Street



- Broadview Green Grid Project



- Other examples: 110th Cascade, High Point

Portland

- Exploring stormwater mitigation techniques
- Attained federal funding for pilots
- Multimodal (includes bike & ped) in all transportation planning



City of Portland Environmental Services: http://www.cleanrivers-pdx.org/clean_rivers/siskiyou.htm



<http://www.trans.ci.portland.or.us/plans/TransportationSystemPlan/Chapter5/Bicycle-5.pdf>

Vancouver

- Country Lane alley design
- Centre Strip alley paving, swale construction
- Bike & ped-friendly, planning for 1km-separated grid of bike paths



City of Vancouver, Engineering Services:
<http://www.city.vancouver.bc.ca/engsvcs/streets/design/enviro.htm>



City of Vancouver, Engineering Services:
<http://www.city.vancouver.bc.ca/engsvcs/transport/cycling/index.htm>

Boston, MA

- A private entity in Boston has developed a woonerf
- Pedestrian-friendly downtown; many pedestrian-only streets
- Using structural soils in construction
- Big value (\$) placed on street trees



www.maristas.com/ar/m_noticia/boston/fotos04_11/boston/crossing.jpg

Brookline, MA

- City worked with hotel on permitting for development of woonerf
- Traffic calming: raised pedestrian crossing, curb extensions, chicanes



<http://marriott.com/property/propertyPage.mi?marshaCode=BOSBL>

- New city bylaw requires new development over certain size to have stormwater management plan

Chicago

- Chicago striving to become “greenest” city in America



www.greenroofs.com/north_american.htm

- Working on stormwater management, green, and pedestrian/bike orientation aspects



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www.kimkarpeles.com/beach.htm



www.chicago-l.org/stations/sox-35th.html

Madison, WI

- Has Bike Transportation Plan:
 - Downtown free & rental bikes for public use
 - Integrates bike lanes into nearly all new street development & street redevelopment
- Working to develop raingarden streets, similar to SEA Street



Maplewood, MN

- Using raingardens concept, encouraging private development of same
- “Environmental Utility Fund” (EUF)
 - Monthly per-house fee (industrial & commercial charged site-specific amount equivalent to amount of impervious areas).
 - Similar to sewer/water service charges
 - EUF based on quantity of water runoff and/or pollutant load from particular parcel
 - EUF ongoing, used solely for surface water management.



Michigan

- Strong desire for more pedestrianization of towns
- Executive (Governor) policy calls for Context Sensitive Design
- New methodology moving towards more use of design charrettes, incorporating more citizen input into street design

New York City

- Working on using pervious paving
- Working on developing “green” design standards, BMPs matrix for institutional memory of sustainable street design processes

Santa Monica, CA

- Working to improve pedestrian accessibility, particularly in downtown core
- Using pervious paving for gutters
- Has Urban Water Management Plan (2000) that requires development of a certain size to implement urban runoff mitigation methods
- 2001 - Urban runoff water recycling facility (SMURRF) for dry-weather flows went online
 - City sells recycled water from SMURRF

Calgary, AB

- City has been focusing on adding sustainable street design elements to neighborhood plans
- New Pathway and Bike Implementation Plan
 - Requires bike & ped amenities on new/redeveloping streets
 - Also using traffic-calming policy

Christchurch, New Zealand

- “Living Streets” – multimodal focus for all roads
- Working to strengthen interdepartmental collaboration
- City code calls for all road funding to benefit bikes, peds, and transit as well as cars
- Numerous traffic calming measures



The Netherlands

- Bike transit makes up 25% of Amsterdam's transportation
- Amsterdam experimenting with “park-n-bikes,” lockers
- Woonerf are a Dutch invention



Amsterdam Dept. for Infrastructure & Transportation:
<http://www.ivv.amsterdam.nl/fiets/stalling/stalling01.htm>



<http://www.pedbikeimages.org/imageDetail.cfm>

Summary

- Sustainable street design is in its infancy
- Sustainable street design is the way of the future
- Portland, Seattle, and Vancouver lead the way in North America
- Other cities are ramping up their efforts
- Much can be learned from abroad